



REMARKS

I. Formalities

As an initial matter, Applicant notes that the due date for filing a response is September 16, 2006. However, in accordance with 37 C.F.R. § 1.7(a), because September 16, 2006 falls on a Saturday, a response with a one-month extension may be filed on September 18, 2006, which is the next succeeding business day that is not a Saturday, Sunday, or a Federal Holiday.

Applicant thanks the Examiner for acknowledging the claim for priority under 35 U.S.C. § 119, and receipt of the certified copy of the priority document submitted on September 17, 2004.

Applicant thanks the Examiner for considering the references cited with the Information Disclosure Statement filed on September 17, 2004.

However, the Examiner did not indicate whether the Formal Drawings filed on April 5, 2004 are accepted. Applicant respectfully requests that the Examiner acknowledge and approve the aforementioned Formal Drawings.

II. Status of the Application

By the present amendment, Applicant amends claims 1-3 to improve clarity. The amendments to claims 1-3 are not made for patentability reasons and do not narrow the scope of the claims. Accordingly, this amendment does not foreclose application of reasonable equivalents. Claims 1-5 are all the claims pending in the Application, with claims 1 and 2 being in independent form. Claims 1-5 have been rejected.

The present amendment addresses each point of objection and rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

III. Allowable Subject Matter

Applicant thanks the Examiner for indicating that claim 3 would be allowed if rewritten in independent form. However, Applicant respectfully requests that the Examiner hold in abeyance such rewriting until the Examiner has had an opportunity to reconsider (and withdraw) the prior art rejection of the other claims.

IV. Indefiniteness Rejection

The Examiner has rejected claims 2 and 3 as allegedly being indefinite under 35 U.S.C. § 112, second paragraph, for allegedly failing to particularly point out and distinctly claim the invention. Applicant respectfully traverses these rejections for *at least* the reasons set forth below.

The requirement to “distinctly” claim means that the claim must have a meaning discernible to one of ordinary skill in the art when construed according to correct principles. (MPEP §2173.02). Only when a claim remains insolubly ambiguous without a discernible meaning after all reasonable attempts at construction should an Examiner declare it indefinite. (See MPEP §2173.02). As such, the MPEP makes it clear that the Examiner “should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. (MPEP §2173.02). Applicant submits that the present claims, as set forth above, define the patentable subject matter with a reasonable degree of particularity and distinctness in accordance with the requirements of the MPEP.

First, the grounds of rejection allege that claim 2 recites “at least one of...” and it is unclear what options are included with respect to the recited “at least one of...” Applicant has amended claim 2, as set forth above, to make it more clear that the phrase “at least one of...” relates to two options: (1) moving a phase-shifting structure and a detector element laterally relative to the optical imaging system to be measured, and (2) moving an object-side mask structure laterally relative to the detector element. Thus, Applicant submits that a skilled artisan would readily discern what options are included in the recited “at least one of...” as set forth in claim 2.

Second, the grounds of rejection allege that claim 2 recites the feature of “a pupil image,” and that there is insufficient antecedent basis for this limitation. Applicant respectfully disagrees.

Claim 2 plainly does not recite the feature of “a pupil image,” rather, claim 2 recites the feature of “a pupil image offset” (emphasis added). Moreover, Applicant submits that the scope of the recitation “a pupil image offset” would be reasonably ascertainable by those skilled in the art. In particular, Applicant submits that a skilled artisan would readily discern that the “pupil” referenced by the phrase “a pupil image offset,” refers to a pupil of the recited optical imaging system. Indeed, this readily discernable meaning would have been clear to a skilled artisan, especially when claim 2 is construed in light of paragraphs 13-16 and Figures 1-3 of the present specification.

Moreover, even if claim 2 did not provide an explicit antecedent basis for the terms “a pupil image offset” (which Applicant firmly submits that claim 2 does), the MPEP makes it clear

that the failure to provide explicit antecedent basis for terms does not always render a claim indefinite. (MPEP §2173.05(e)). To the contrary, if the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. (MPEP §2173.05(e)). Therefore, since the precise meaning of the phrase “a pupil image offset” is a well-known technical term of an optical imaging system, this meaning would have been readily discernible to one of ordinary skill in the art. As such, Applicant submits that the Examiner’s rejections with respect to the recitation “a pupil image offset” are improper for *at least* these reasons.

Third, the grounds of rejection also allege that the direction “laterally,” as recited in claim 2 is indefinite. Applicant respectfully disagrees and submits that a skilled artisan would readily discern that the phrase “laterally relative to the optical imaging system,” as recited in claim 2, references a direction which is orthogonal to an optical axis of the optical imaging system. In fact, this readily discernable meaning would have been crystal clear to a skilled artisan when claim 2 is construed in light of paragraph 13, lines 7-10 of the present specification. Therefore, Applicant submits that the Examiner’s rejections with respect to the recitation “laterally” are improper for *at least* these reasons.

Fourth, the grounds of rejection allege that the meaning of “respectively recorded by the detector element,” as recited in claim 2, is unclear. Specifically, the grounds of rejection allege that it is unclear whether the pupil image or the interferogram is respectively recorded. Applicant has amended claim 2 as set forth above to recite the feature of “wherein the interferograms are respectively recorded by the detector element” and submits that the meaning

of this phrase would have been readily discernable to one of ordinary skill in the art (emphasis added).

Fifth, the grounds of rejection allege that the recitation “in a way correcting the pupil position” is narrative and does not further limit the claim. Applicant has amended claim 2, as set forth above, to remove the aforementioned recitation and, thus, Applicant submits that the Examiner’s rejection in this regard is now moot.

With respect to claim 3, the grounds of rejection allege that claim 3 does not define “*N*,” as recited therein. Applicant has amended claim 3, as set forth above, to recite the feature of wherein *N* denotes a total number of phase steps. Therefore, Applicant submits that the meaning of “*N*” is sufficiently definite under 35 U.S.C. § 112 for *at least* these reasons, especially when considered in light of paragraph 34 of the present specification.

In view of the above, Applicant respectfully requests that the Examiner withdraw these rejections.

V. Claim Rejections under 35 U.S.C. §102

A. Independent Claim 1

The Examiner has rejected claim 1 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,307,635 to Goldberg (hereinafter “Goldberg ‘635”). Applicant respectfully traverses this rejection for *at least* the independent reasons stated below.

According to the MPEP, “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art

reference.” (MPEP § 2131). Applicant respectfully submits that claim 1 positively recites limitations which are not disclosed (or suggested) by Goldberg ‘635.

Independent claim 1 recites (among other things):

...wherein the mask structure which is arranged on the object side comprises one or more one-dimensional mask structure patterns... or

wherein the mask structure comprises one or more two-dimensional mask structure patterns...

The grounds of rejection allege that the mask 56, as disclosed in Goldberg ‘635, corresponds to the claimed “mask structure.” Applicant respectfully disagrees.

It is well settled that claim interpretation is not conducted in a vacuum. “It is axiomatic that, in proceedings before the PTO, claims in an application are given their broadest reasonable interpretation consistent with the specification, and that claim language should be read in the light of the specification as it would be interpreted by one of ordinary skill in the art.” In re Bond, 910 F.2d 831, 833, 15 U.S.P.Q.2d 1566, 1568 (Fed. Cir. 1990), citing In re Snead, 710 F.2d 1544, 1548, 218 U.S.P.Q. 385, 388 (Fed. Cir. 1983).

Applicant submits that a skilled artisan would readily discern that the terms “one-dimensional” and “two-dimensional,” with respect to the recited mask structures and grating structures, refer to, for instance, structures or patterns which are periodic in one, or in two, non-parallel directions, respectively.

Indeed, this interpretation would be readily ascertainable by one of ordinary skill in the art and is consistent with the use of the terms “one-dimensional” and “two-dimensional,” as used with respect to mask structures and grating structures throughout the present specification. In

fact, such an interpretation is also consistent with the Goldberg '635 patent itself, which employs the terms "one-dimensional" and "two-dimensional," in the same manner as the present specification (i.e., to refer to structures or patterns which are periodic in one, or in two non-parallel directions, respectively).

When claim 1 is properly construed as it would be interpreted by one of ordinary skill in the art, it is clear that Goldberg '635 fails to disclose, or even remotely suggest, the feature of one-dimensional or two-dimensional mask structure patterns. That is, Goldberg '635 fails to teach or suggest the feature of mask structure patterns which are repeatedly periodic in one direction or in two non-parallel directions, as required by claim 1.

To the contrary, the apparatus disclosed in Goldberg '635 exclusively uses point diffraction masks having a pinhole. *See e.g.*, column 4, lines 52-66. Thus, Goldberg '635 merely discloses zero-dimensional mask structure patterns according to the meanings of the terms "one-dimensional" and "two-dimensional," as readily understood in the art. In stark contrast to Goldberg '635, claim 1 plainly recites the feature of one-dimensional or two-dimensional mask structure patterns, a feature concerning which Goldberg '635 is completely silent.

Thus, Applicant respectfully submits that independent claim 1 is not anticipated by (i.e. is not readable on) the applied Goldberg '635 reference for *at least* these independent reasons. Thus, Applicant respectfully requests that the Examiner withdraw this rejection.

B. Independent Claim 2

The Examiner has rejected claims 2 and 4-5 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,239,878 to Goldberg (hereinafter “Goldberg ‘878”). Applicant respectfully traverses these rejections for *at least* the independent reasons stated below.

Independent claim 2 recites (among other things):

...wherein a pupil image offset... is taken into account by back calculating interferograms, wherein the interferograms are respectively recorded by the detector element, using a phase-shifting characteristic associated with the lateral movement, or

wherein the pupil image offset is taken into account by a computational correction of wavefront derivatives, obtained from the recorded interferograms, in the direction of lateral movement.

The grounds of rejection broadly allege that column 6, lines 49 – column 9, lines 34 of Goldberg ‘878 discloses or suggests the above features. Applicant respectfully disagrees. No aspect of Goldberg ‘878 discloses, or even remotely suggests, the feature of back calculating recorded interferograms so as to account for a pupil image offset which occurs due to the movement of the phase-shifting structure and the detector element laterally relative to the optical imaging system, or the feature of a computational correction of wavefront derivatives, obtained from the recorded interferograms, in the direction of lateral movement, as recited in claim 2.

To the contrary, Goldberg ‘878 deals exclusively with a completely different issue, namely, that of correcting an alignment error of the phase-shifting point-diffraction interferometry technique used therein. Indeed, the correcting of an alignment error disclosed in

Goldberg '878 is entirely unrelated to the correction of a pupil image offset occurring due to the movement of the phase-shifting structure and the detector element laterally relative to the optical imaging system, as claimed, which is performed in phase-shifting interferometry. Further, one of ordinary skill in the art would recognize that the recited pupil image offset is not just an alignment error.

Accordingly, the correction method taught in Goldberg '878 is completely different from the method recited in claim 2. In particular, Goldberg '878 uses two approaches: first, an approach using the Fourier transform of the intensity function (or more specifically through the two pseudo images of the mask) and, second, by the global contrast in the phase-shifting. However, no aspect of Goldberg '878 teaches or suggests an approach by which the deterministic error of the phase-shifting procedure (when the phase-shifting structure and the detector element are coupled for common lateral movement relative to the optical imaging system to be measured) is compensated by an appropriate algorithm, as claimed in claim 2.

While the Examiner sets forth the conclusory allegation that column 6, lines 49 – column 9, lines 34 of Goldberg '878 discloses or suggests the many distinct features recited in claim 2, the grounds of rejection do not identify any specific aspects from this passage of Goldberg '878 which respectively correspond to the particular features of claim 2. In fact, column 6, lines 49 – column 9, lines 34 of Goldberg '878 disclose nothing more than correcting an alignment error of the phase-shifting point-diffraction interferometry technique, as discussed above.

However, a claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently in a single prior art reference. Verdegaal Bros. v. Union Oil

Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). In fact, the identical invention must be shown in as complete detail as contained in the claim. MPEP §2131.

Here, since the grounds of rejection have failed to provide any specific evidentiary support, in fact and/or reasoning, to establish a correspondence between the specific elements of a sweepingly broad range of Goldberg '878 and the various features of the claimed invention, Applicant submits that the rejections are improper for *at least* these reasons. Further, if the Examiner decides to persist in these grounds of rejection, Applicant respectfully requests that the Examiner explain in detail what specific aspect of Goldberg '878 discloses taking into account a pupil image offset by back calculating interferograms using a phase-shifting characteristic associated with the lateral movement, or by a computational correction of wavefront derivatives, obtained from the recorded interferograms, in the direction of lateral movement, as claimed.

Accordingly, Applicant respectfully submits that independent claim 2 is not anticipated by (i.e. is not readable on) the applied Goldberg '878 reference for *at least* these independent reasons. Further, Applicant respectfully submits that the dependent claims 4 and 5 are allowable *at least* by virtue of their dependency on claim 2. Thus, Applicant respectfully requests that the Examiner withdraw these rejections.

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

**Amendment under 37 C.F.R. § 1.111
U.S. Serial No. 10/816,896**

Attorney Docket No.: Q80898

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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